

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2005/051464

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 C12N15/90 C12N5/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 C12N C07K C12R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, EMBASE, BIOSIS, Sequence Search

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category <sup>a</sup>	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	<p>NINOMIYA YUUKO ET AL: "Highly efficient gene replacements in Neurospora strains deficient for nonhomologous end-joining"          PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, vol. 101, no. 33, 17 August 2004 (2004-08-17), pages 12248-12253, XP002346025          ISSN: 0027-8424          the whole document</p> <p>-----</p> <p>'Online! 15 March 2005 (2005-03-15),          XP002346026          Retrieved from the Internet:          URL: <a href="http://www.fgsc.net/Aspergillus/Asper2program.pdf">http://www.fgsc.net/Aspergillus/Asper2program.pdf</a> &gt; 'retrieved on 2005-09-21!          the whole document</p> <p>-----</p> <p style="text-align: center;">-/--</p>	1-25
P, X		1-25

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

<sup>a</sup> Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the International filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the International filing date but later than the priority date claimed

- "T" later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the International search

22 September 2005

Date of mailing of the International search report

02/11/2005

Name and mailing address of the ISA

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PCT/EP2005/051464

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document; with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/052026 A (UNIVERSITEIT LEIDEN; STICHTING BINAIR VECTOR SYSTEEM; HOOYKAAS, PAUL,) 4 July 2002 (2002-07-04) page 15 - page 28 -----	24,25
X	WO 00/60359 A (KUDOS PHARMACEUTICALS LIMITED; JACKSON, STEPHEN, PHILIP; GELL, DAVID,) 12 October 2000 (2000-10-12) figure 1 -----	24,25
X	BORKOVICH KATHERINE A ET AL: "Lessons from the genome sequence of <i>Neurospora</i> <i>crassa</i> : Tracing the path from genomic blueprint to multicellular organism." MICROBIOLOGY AND MOLECULAR BIOLOGY REVIEWS, vol. 68, no. 1, March 2004 (2004-03), pages 1-108, XP002346027 ISSN: 1092-2172 page 35; table 24 page 37, right-hand column -----	24,25
X	DATABASE NCBI NIH; 12 March 2003 (2003-03-12), "Neurospora crassa strain OR74A chromosome IV cont3.499" XP002346205 Database accession no. AABX1000206 abstract -----	24,25
X	DATABASE NCBI NIH; 12 March 2003 (2003-03-12), "Neurospora crassa strain OR74A cont3.5" XP002346206 Database accession no. AABX01000750 abstract -----	24,25
X	BOULTON SIMON J ET AL: "Identification of a <i>Saccharomyces cerevisiae</i> Ku80 homologue: Roles in DNA double strand break rejoining and in telomeric maintenance" NUCLEIC ACIDS RESEARCH, vol. 24, no. 23, 1996, pages 4639-4648, XP002346028 ISSN: 0305-1048 the whole document ----- -/-	24,25

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	TSUKAMOTO Y ET AL: "Hdf1, a yeast Ku-protein homologue, is involved in illegitimate recombination, but not in homologous recombination" NUCLEIC ACIDS RESEARCH, OXFORD UNIVERSITY PRESS, SURREY, GB, vol. 24, no. 11, 1996, pages 2067-2072, XP002170162 ISSN: 0305-1048 the whole document	24, 25
X	NINOMIYA YUUKO ET AL: "Analysis of non-homologous recombination genes, ncku70 and ncku80, in Neurospora crassa" GENES & GENETIC SYSTEMS, vol. 78, no. 6, December 2003 (2003-12), page 463, XP009054253 & 75TH ANNUAL MEETING OF THE GENETICS SOCIETY OF JAPAN; SENDAI, JAPAN; SEPTEMBER 24-26, 2003 ISSN: 1341-7568 the whole document	1-5, 9-13, 15-17
X	WO 01/68882 A (TRANSKARYOTIC THERAPIES, INC; IVANOV, EVGUENII) 20 September 2001 (2001-09-20) page 33, line 21 - page 43, line 17	6-8, 14

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### Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
  
3.  Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

#### Remark on Protest

The additional search fees were accompanied by the applicant's protest.  
 No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Present claims 1-3, 10, 11 and 16 encompass a mutant filamentous fungal cell defined only by a desired characteristic (the mutant filamentous fungal cell has a steering towards homologous recombination, the mutant filamentous fungal cell has a ratio non-homologous recombination/homologous recombination that is decreased or the mutant filamentous fungal cell is deficient in a gene encoding a component involved in non-homologous recombination). Contrary to the requirements of clarity of Article 6 PCT, these claims relate to a result-to-be-achieved type of definition that does not allow the scope of the claim to be ascertained.

This non-compliance with the substantive provisions is to such an extent, that the search was performed taking into consideration the non-compliance in determining the extent of the search of the claim (PCT Guidelines 9.19 and 9.20).

The description provides support and disclosure in the sense of Article 6 and 5 PCT for a mutant in the hdfA and/or hdfB genes. The search of claims 1-3, 10, 11 and 16 was therefore restricted to the mutants specifically disclosed in examples 2, 3 and 4 of the present application that have the desired property.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/EP2005/051464

Patent document cited in search report	Publication date	Patent family member(s)			Publication date
WO 02052026	A 04-07-2002	CA	2432717 A1		04-07-2002
		EP	1217074 A1		26-06-2002
		US	2004073967 A1		15-04-2004
WO 0060359	A 12-10-2000	AU	3568900 A		23-10-2000
		EP	1166123 A2		02-01-2002
		GB	2351494 A		03-01-2001
		US	6753151 B1		22-06-2004
WO 0168882	A 20-09-2001	AU	4563701 A		24-09-2001
		CA	2403113 A1		20-09-2001
		EP	1263972 A2		11-12-2002
		JP	2003526376 T		09-09-2003
		MX	PA02009044 A		25-04-2003
		TR	200202196 T2		21-01-2003
		US	6569681 B1		27-05-2003